

What is livestock technology?

- It encompasses a broad range of applications.
- Uses and benefits to producers will depend on the individuals needs.
- It range from EID (electronic identification), smart tags, telemetry systems to shearing shed design.
- Focusing today on EID and individual animal management.

Electronic Identification (EID) – Why do we want to use It?



It is a technology that facilitates individual animal management through:

- Improved data accuracy.
- Eliminate tag reading errors.
- Improved stock handling – less stress.
- Reduction in time taken to collect data.
- Improved data collation and recall.

INDIVIDUAL ANIMAL MANAGEMENT (IAM)

- Individual Animal Management is the selection, management and marketing of animals based on measured or individual production rather than that based on flock management principals.
- It allows returns to be maximised from high value animals and minimises costs among low value animals.
- It allows for the exploitation of the variation that exists within flocks of key profit drivers, e.g. Wool traits, meat traits.
- New technologies exist to improve productivity and profitability of livestock enterprises, look how you can incorporate these into your management practices.

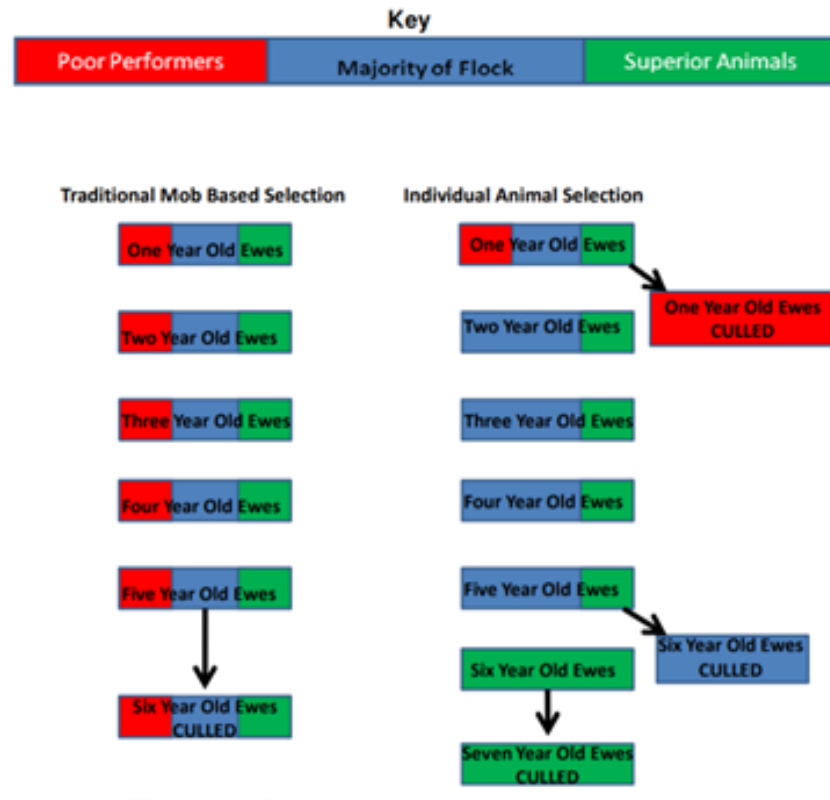
Under the traditional system of mob based selection:

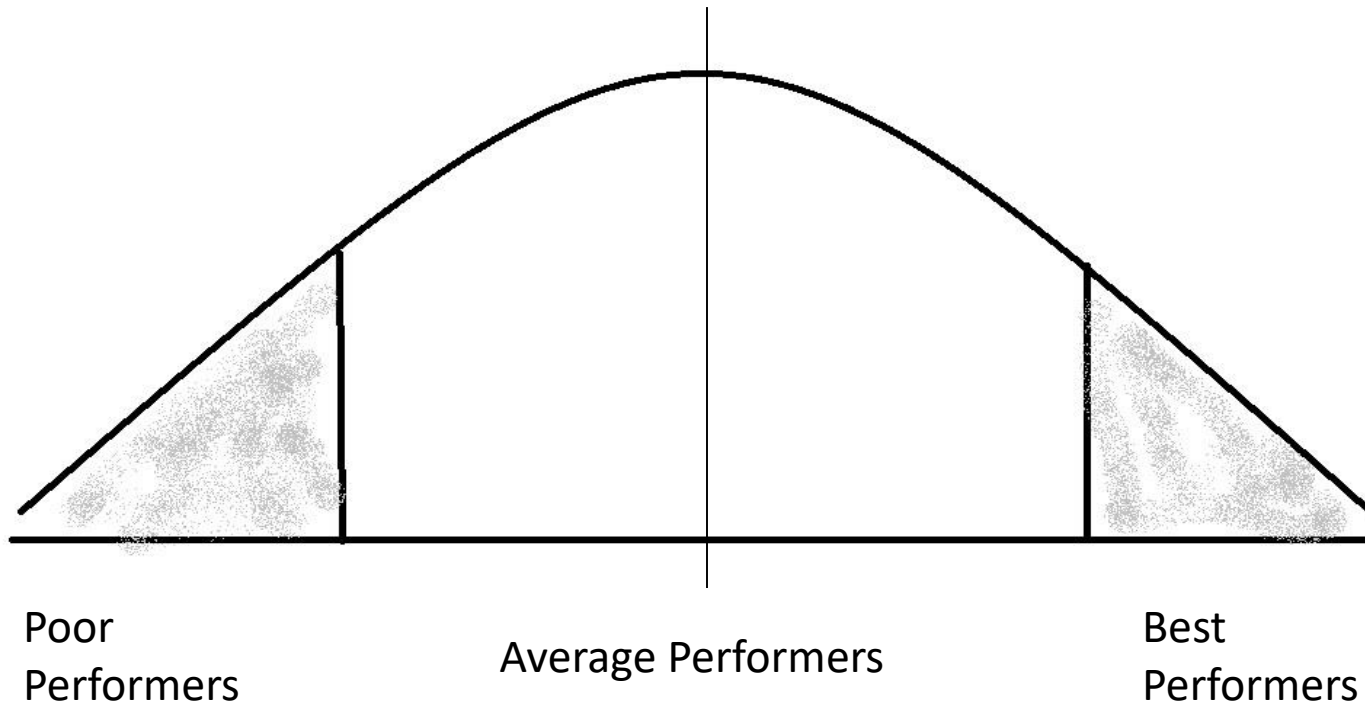
- poor performers are retained throughout
- superior animals are culled prematurely based purely on age not individual performance.

Under the individual animal selection model:

- poor performers are identified and removed to reduce the cost incurred
- superior animals are retained as long as possible.

Overall the number of animals within the two flocks may be very similar, it is just the makeup of the flock which is different.





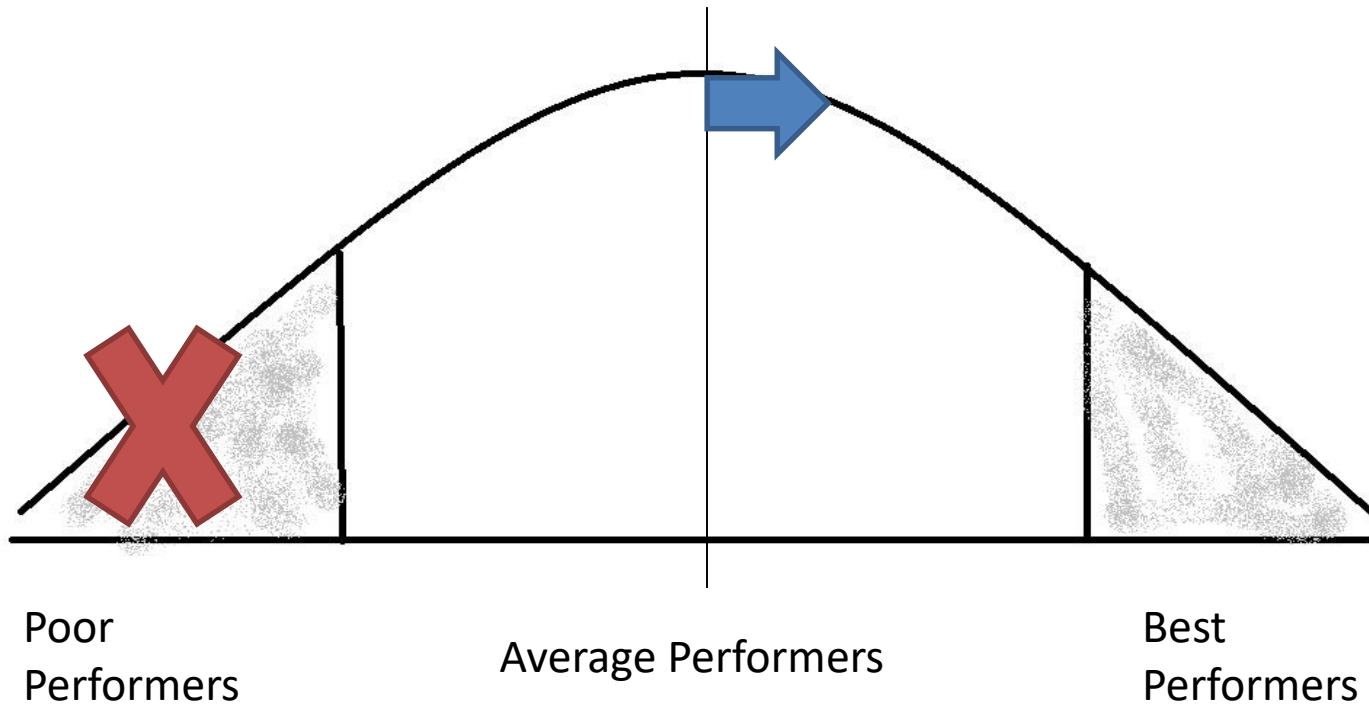


Table 1.1: Spread of Variability within a Merino Flock

<i>Trait</i>	<i>Production level of flock:</i>		
	Top 25%	Average	Bottom 25%
Wool Traits:			
Clean Fleece Weight (kg)	5.3	4.6	3.9
Fibre Diameter (μm)	18.9	20.4	21.9
	35		
Staple Strength (N/ktex)	42	35	28
Meat Traits:			
Growth rate (g/day)	357	284	200
Fat depth (mm)	8.9	10.6	12.5
Reproduction:			
Lambs weaned per ewe joined	1.43	0.86	0.28
Profitability traits:			
Fleece value per ewe (\$)	82	54	37
Carcase value per ewe (\$)	56	33	12

Source: *Atkins, Richards and Semple 2006*

Table 1.1: Spread of Variability within a Merino Flock

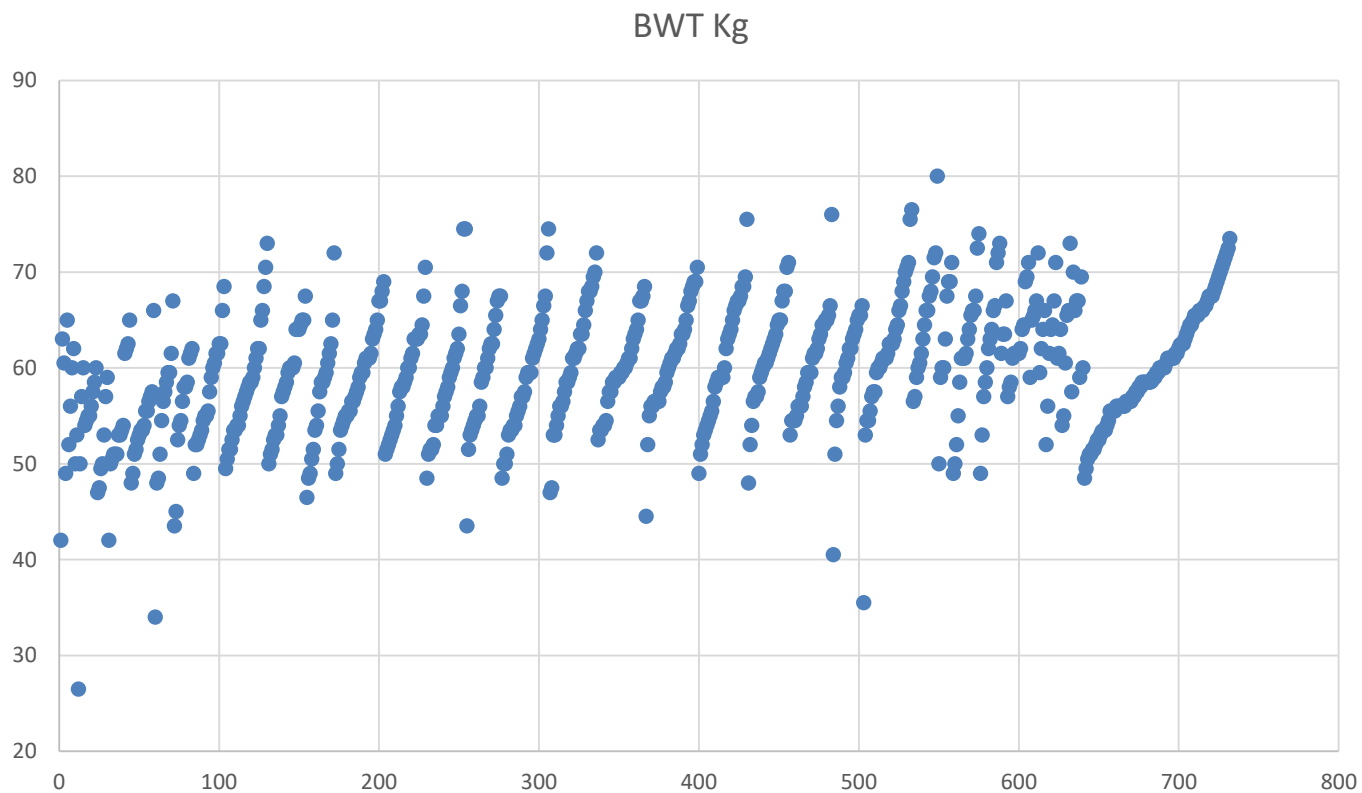
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Bottom 25 %

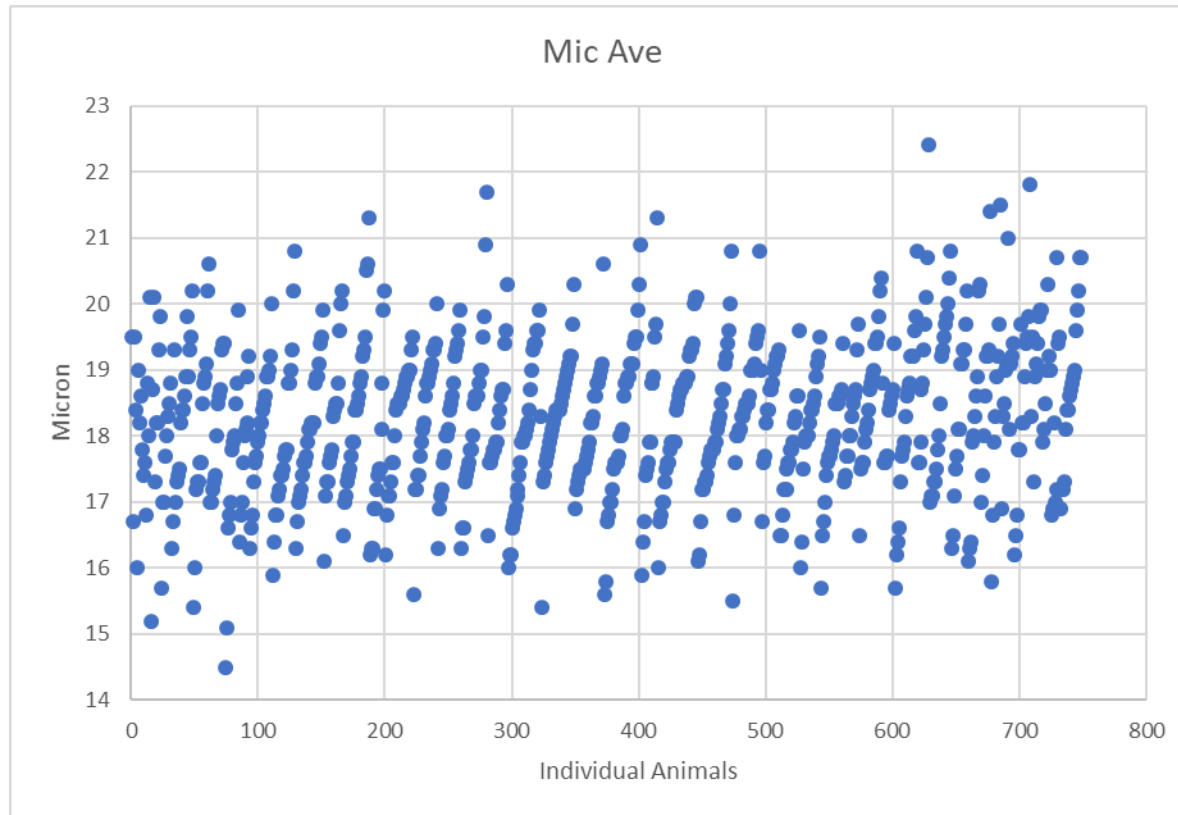
50%

Top 25%

56.1kg

59.5kg

61.5kg



Bottom 25 %

50%

Top 25%

16.5

18.0

19.5

\$80.03 per fleece
At \$14.04 greasy
5.7kg av.

\$86.36 per fleece
At \$12.70 greasy
6.8kg av.

\$93.60 per fleece
At \$11.70 greasy
8kg av.

Litter Weight Weaned

$$\begin{array}{c} \text{Pedigree MatchMaker} \\ + \\ \text{Individual weaning weight (100 days)} \\ = \\ \text{Litter Weight Weaned} \end{array}$$

- Fertility
- Number of lambs born
- Lamb survival
- Lactation
- Lamb Growth



Effective composite trait selection

Uses for EID for Producers

Usage will depend on producers individual management needs and profit drivers, they could include:

- Pedigree information
- Weights and weight gain
- Vaccine and parasite history and management
- Supplement history
- Fertility – incl. Pregnancy scanning data
- Fleece measurements – micron, fleece weights.

It gives the producer the ability to make decisions based on an individual animals performance and tailor management/production systems accordingly.

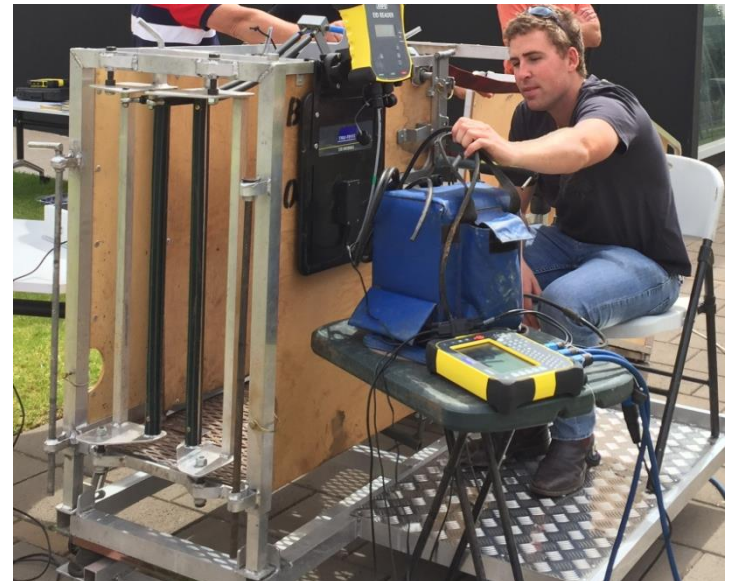
7.1 Project findings

- -Utilising data captured through electronic identification technology has the ability to increase producer gross margins via identifying superior animals to act as replacements, as well as removing those animals that underperform.
- Through modelling a range of management options it was found that the average **cost benefit of utilising eID to improve breeding and selection decisions was approximately \$4.12 return for every dollar invested.**
- Improving the ability of producers to identify and remove poor performing animals within the flock will increase producer and financial resilience to difficult seasons and market conditions as costly non-productive animals are removed from the flock. -
- Selection of more productive animals will lead to reduced mortality and reproductive wastage in sheep, resulting in improved social outcomes.

Reference: Maximising the value of existing technology for sheep producers, MLA final report by Hamish Dickson

What equipment is out there?

- Hand held readers & Panel Readers
 - Allflex, Leader, Shearwell, Aleis, Gallager



What equipment is out there?

- Scales and automatic drafting systems.



Ability to weigh and/or draft sheep automatically on predetermined parameters.

Auto Drafting



autodrafting.MOV



Ability to draft sheep automatically on predetermined parameters.

Pedigree Matchmaker



Uses the physical association between electronically tagged ewes and their lambs to record lamb survival and assign maternal pedigree information.

Pedigree – New Technologies

- **SmartShepherd System**



<https://www.smartshepherd.com.au>

- Estimated cost \$15 per tag, reusable, guaranteed for 3 years.

- **Genotyping & Parentage Testing**

Data Management



Data Management

- No data is worth collecting if will not used in some way to influence your enterprise.
- **ALWAYS** save a copy of your file before opening or editing!
- The most common source of data corruption is **YOU!**

Data Support Systems and Software

- Variety of software programs to manage data available.
- Kool Collect & Kool Perform (Sapien)
- Stockbook
- Agriwebb
- BreedElite (BreedELITE Smart Draft'n'Weigh System)
- Excel
- Scale Heads – Gallagher, Trutest



Microsoft Excel

- Sort Data

EID	Mic Rank	Mic Ave	Mic Dev	SD Mic	CV Mic	<15 %	CF %	SL mm	CRV Dg/mr	BWT	GFW	RP DP+ Value	RP DP+ Rank
Average	33.0	19.3	0.0	3.1	16.0	5.8	99.4	64.5	60.7	62.1	2.5	100.3	33.0
940 110002727448	46	20	0.7	3	15.1	2.1	99.4	60	54.7	66.4	2.8	104.38	14
940 110003041083	17	18.6	-0.7	2.7	14.6	4.1	99.8	50	60	58	2.8	93.45	57
940 110002728187	13	18.3	-1	3.6	19.4	13.1	99.8	55	67.2	59.4	2.1	96.74	46
940 110002728210	20	18.8	-0.5	2.9	15.4	5.3	99.7	70	64.3	60.4	2.4	99.37	36
940 110002728184	63	21.2	1.9	3.4	16	1.3	98.8	80	58.4	64.6	2.3	103.93	17
940 110002727450	1	15.4	-3.9	2.5	16.5	39.3	100	45	67.8	55.6	1.9	90.35	61
940 110003041089	37	19.4	0.1	3	15.5	3.3	99.7	65	60.4	64.4	2.3	102.05	29
940 110002728212	64	22	2.7	3.4	15.6	0.6	98.5	75	60.2	58.4	2.3	94.70	53
940 110002728178	4	17	-2.3	2.6	15.5	16.9	100	50	73.6	56	2.3	91.41	59
940 110002728206	26	19.1	-0.2	3.1	16.1	3.8	99.4	55	59.5	67.2	3	106.36	11
940 110002728200	54	20.4	1.1	3.2	15.7	1.9	99.4	60	51.2	63	2.7	99.88	33
940 110002728179	24	19	-0.3	3.4	17.9	6.7	99.3	60	64.6	55	2.2	91.40	60
940 110002728244	52	20.3	1	3.3	16.1	2.1	99.2	65	57.2	63.4	2.6	101.54	30
940 110002728250	49	20.2	0.9	3.3	16.2	2.3	99.2	65	54.9	64	2.9	103.49	21
940 110002728214	3	16.7	-2.6	2.8	16.8	20.1	100	60	69.4	66.4	2.1	106.00	12
940 110002728228	9	17.8	-1.5	2.9	16.4	10.6	100	75	54.9	68.6	2.5	111.85	5
940 110002728190	56	20.6	1.3	3.1	15.1	0.8	99.2	65	66.9	70.6	2.3	107.64	10
940 110002728231	8	17.3	-2	2.6	15.2	13.2	100	70	62.9	65	2	104.54	13
940 110002728243	10	18.2	-1.1	2.7	15	7.3	100	70	56.9	60.6	2.4	99.84	35
940 110002727447	58	20.8	1.5	3	14.6	1.1	99.3	75	64.1	65.2	2.4	103.34	23
940 110002728238	41	19.6	0.3	3.1	15.6	2.7	99.4	65	61.4	61	2.8	99.84	34
940 110003040884	60	20.9	1.6	3	14.2	0.4	99.1	65	56	49.7	2.4	83.06	65
940 110002728232	2	16.5	-2.8	2.3	14.1	19.3	100	65	64.2	58.8	1.8	95.68	49
940 110002728247	65	23.7	4.4	3.8	16.1	0.1	96	60	64.7	68.6	2.8	103.91	18
940 110002727443	42	19.7	0.4	3	15.2	2.1	99.2	75	51.4	62.6	2.5	102.39	27

Microsoft Excel

- Apply Filters

The screenshot shows the Microsoft Excel interface with the 'Data' tab selected. The 'Filter' button in the 'Sort & Filter' group is active, and the 'Filter' menu is open. The menu options include 'Sort Smallest to Largest', 'Sort Largest to Smallest', 'Sort by Color', 'Filter by Color', and 'Number Filters'. The 'Number Filters' option is selected, and a sub-menu is open showing a list of values to filter by, including 44.4, 50.9, 51.2, 51.4, 51.8, 54.2, 54.4, 54.5, and 54.7. The active cell is F4, containing the value 14.6.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	EID	Mic Rank	Mic Ave	Mic Dev	SD Mic	CV Mic	<15 %	CF %	SL mm	CRV Dg/mm	BWT	GFW	RP DP+ Value	RP DP+ Rank		
2	Average	33.0	19.3	0.0	3.1	16.0					62.1	2.5	100.3	33.0		
3	940 110002727448	46	20	0.7	3	15.1					66.4	2.8	104.38	14		
4	940 110003041083	17	18.6	-0.7	2.7	14.6					58	2.8	93.45	57		
5	940 110002728187	13	18.3	-1	3.6	19.4					59.4	2.1	96.74	46		
6	940 110002728210	20	18.8	-0.5	2.9	15.4					60.4	2.4	99.37	36		
7	940 110002728184	63	21.2	1.9	3.4	16					64.6	2.3	103.93	17		
8	940 110002727450	1	15.4	-3.9	2.5	16.5										
9	940 110003041089	37	19.4	0.1	3	15.5										
10	940 110002728212	64	22	2.7	3.4	15.6										
11	940 110002728178	4	17	-2.3	2.6	15.5										
12	940 110002728206	26	19.1	-0.2	3.1	16.1										
13	940 110002728200	54	20.4	1.1	3.2	15.7										
14	940 110002728179	24	19	-0.3	3.4	17.9										
15	940 110002728244	52	20.3	1	3.3	16.1										
16	940 110002728250	49	20.2	0.9	3.3	16.2										
17	940 110002728214	3	16.7	-2.6	2.8	16.8										
18	940 110002728228	9	17.8	-1.5	2.9	16.4										
19	940 110002728190	56	20.6	1.3	3.1	15.1										
20	940 110002728231	8	17.3	-2	2.6	15.2										
21	940 110002728243	10	18.2	-1.1	2.7	15										
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23	940 110002728238	41	19.6	0.3	3.1	15.6	2.7	99.4	65	61.4	61	2.8	99.84	34		
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27	940 110002727443	42	19.7	0.4	3	15.2	2.1	99.2	75	51.4	62.6	2.5	102.39	27		
28	940 110002728221	32	19.2	-0.1	2.8	14.7	1.7	99.4	65	57.1	51.8	2.4	87.44	62		
29	940 110002728201	14	18.4	-0.9	2.5	13.7	4.1	99.9	60	65.9	77	2	114.27	3		
30	940 110002728257	18	18.6	-0.7	2.6	14.2	5	99.9	75	61.2	73.2	2.4	114.64	2		
31	940 110002728205	53	20.4	1.1	4.1	20	3.4	97.6	70	51.8	62.2	2.5	103.11	25		
32	940 110002728227	21	18.8	-0.5	2.9	15.2	5.5	99.8	65	59.5	68.8	2.4	107.87	9		
33	940 110003041085	36	19.3	0	3.1	16.1	4.3	99.4	65	59.4	65	2.3	103.23	24		
34	940 110002727441	7	17.3	-2	2.6	15.3	13.2	100	70	63.3	69.2	2.3	110.55	7		
35	940 110003041083	61	21	1.7	2	14.4	6.5	99	65	67.5	65	2.4	108.83	21		

Microsoft Excel

Other useful excel functions

- Vlookup – lookup and retrieve data
- Concatenate – combine contents of cells
- Find & Replace
- Left, Mid, Right
- If in doubt – Google it!

Apps for Agriculture

- Ramselect
- AskBill
- Koolscan

- Lifetime Ewe Management (AWI)
- Lambing Planner (Dept. of Agriculture & Food WA)

5

Common eID mistakes

**5 common eID mistakes you
can avoid.**

Robert Wyld, Sapien Technology

5 common eID mistakes you can avoid.

1. No Clear Goal.

- Know what you want to achieve/improve.
- How are you going to know if you have achieved it?

2. Not Seeking Good Advice.

- Do your homework – ask specialists, early adopters, product manufacturers.

3. Buying The Wrong Equipment.

- Understand what you are trying to achieve and what is needed to achieve it.

5 common eID mistakes you can avoid.

4. Not Using The Data.

- Data collected is an investment that is not realised until a meaningful decision is made based upon the data.

5. Missed Opportunities.

- Forget (or don't know how) to use the data collected.

“ Many successful clients have saved or made 10 times *their investment* on eID just by being better equipped to make intelligent and confident decisions.”

Conclusion

- Electronic identification assists with individual animal management.
- Rapid advancements within the industry.
- Adoption of new technologies and better usage of existing ones is creating opportunities.
- Potential for new technologies to develop further.
- It is not the collection of data which results in financial benefits. It is the applied usage of this data.

Take Home Message

To get the most out of new technologies

- Establish business objectives, have a clear goal of what your trying to achieve.
- Use cost of production and benchmarking to measure performance and understand key profit drivers.
- Have a risk management plan
- Understand the cost benefit of utilising new technologies.

Vision for Future

- Australian Farmers will be recognised locally and internationally for innovative farming practices meeting demand for traceability, biosecurity and ethical practice.

